SASKATCHEWAN

Burrowing Owl

Status: Endangered

(*Speotyto cunicularia* - recently revised from *Athene cunicularia*)

Species at Risk

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Description

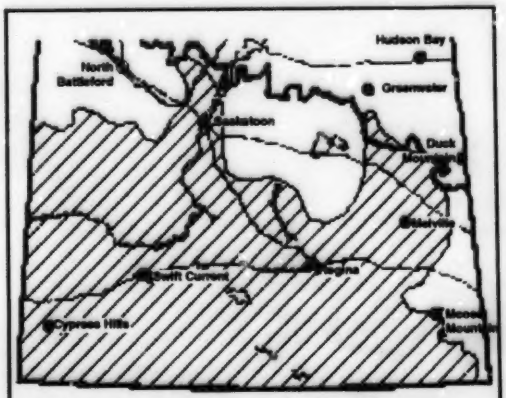
The Burrowing Owl, also known as the Ground Owl, is about 23 centimeters tall and weighs 150 grams on average. It is slightly larger than a robin. It has a round head with large yellow eyes and no ear tufts, long, slim legs, and a short tail. The body feathers are light to dark brown with white spots, and the under parts are pale brown to white. The young have a rusty coloured chest. The male's plumage is often lighter due to sun bleaching while foraging. The female remains underground longer, laying and incubating the eggs. Burrowing Owls are most often seen perching on the mound outside their burrow.

Status

Listed as an endangered species in Saskatchewan in 1999, in the *Wild Species at Risk Regulations*, Burrowing Owls are protected on private, provincial and federal lands under Part V of *The Wildlife Act*. The Committee on the Status of Endangered Wildlife In Canada (COSEWIC) listed Burrowing Owls as threatened in 1979 and up-listed them to endangered in 1995. Following a recent international conference, the US Fish and Wildlife Service is reviewing the status of Burrowing Owls, as they are declining over most of their range in western North America.

Canada is the northern limit of the Burrowing Owl's range in the Americas. They originally occurred in British Columbia, Alberta, Saskatchewan and Manitoba. In 1977, 2000 pairs of owls were estimated to breed in Canada. By 1995, the Canadian population was estimated at less than 1000 breeding pairs. Burrowing Owls are extirpated (no longer found there, but found elsewhere) in British Columbia, but they are currently being reintroduced at two sites through a captive breeding program. In Manitoba, they are likely extirpated.

As recently as 1988, Canadian studies have identified the rate of decline between 20 to 22 per cent per year. More recent studies put the rate between 14 to 17 per cent. Burrowing Owls may become extirpated in all of Canada in less than 20 years, unless the causes of population decline are addressed. Loss of quality habitat is the most pressing concern.



Historic Burrowing Owl range 1987 - 1999.
(Speotyto cunicularia)

Range

The current range of Burrowing Owls in Canada could be described by a large triangle beginning at Estevan, northwest through Regina to south of Saskatoon, west to Calgary and south to the Montana border through Lethbridge. The owl's range continues south into the United States, Mexico and South America. There are also separate eastern populations in Florida and in the northern Carribean islands. About half the remaining Canadian population nests in Saskatchewan.

From 1987 to 2000, research has shown a Burrowing Owl decline from 78 breeding pairs to 1 individual on a small portion of the current Regina Plain study area. In 2000, researcher Danielle Todd observed only 68 owls in the whole study area. Research also suggests a high mortality of owls outside the breeding season. Only 5 per cent of young owls, and only one out of every three adult owls return to the Regina Plain area each spring. All the causes of mortality during migration and over winter are not yet clear. One hypothesis is that young owls may not have enough food prior to migration to be in prime condition to successfully migrate between 2500 - 3500 kilometres one way.

During the winter of 2000/2001, four Canadian owls tagged with radio transmitters were found in southern Texas and Mexico. Canadian Wildlife Services biologists, flying in small aircraft, scanned radio frequencies to locate the owls, then continued the search on the ground. The first Saskatchewan radio-tagged owl was found near Galveston Bay, Texas, in a burned cattle pasture and near oil well sites. The second owl was located near the shore of the Rio Grande River, close to the McAllen International Airport in Texas.

The first radio-tagged owl found in Mexico was located in an orange grove in Veracruz state. It had recently been killed by a predator. The second owl, radio-tagged in Alberta, was located in northern Michoacan state. It was found roosting in cactus-thorn shrubland surrounded by corn fields and pasture. Over 20 other burrowing owls were found wintering on hillsides near this same site. Finding more migrating and wintering Canadian owls, and observing land use practices where these owls are found, will improve our knowledge of factors affecting their over-winter survival with a view toward increasing their survival rates.

Life Cycle

Return and Pairing Up: Burrowing Owls live approximately five to eight years in the wild. They are able to reproduce at 10 months and usually breed in their first or second year. Adult owls return to their Saskatchewan breeding grounds between the second week of April and the third week of May. The males arrive first, establishing a territory around a vacant burrow. Males often return to the same nesting area they used the year before. Females actively search for a mate upon arrival on the breeding grounds.

Burrow and nest: Ideal habitat is a nest burrow in short grass, such as a grazed pasture, surrounded by tall grass and riparian areas suitable for foraging. These burrows are usually dug by Richardson's ground squirrels, badgers, black-tailed prairie dogs or foxes. If necessary, the owls may enlarge the nest burrow by digging, if the soil does not contain too much clay. The nest burrow will often be lined with dried cow or horse manure, which is thought to keep the nest dry during wet weather. Fur and hair are also used as nesting material.

Stocking Up: As breeding season begins, males start hooting, a "coo coooo" call. They also start hunting for deer mice and voles, which they cache (stockpile) in the burrow. In good food years, prey caches may contain more than 100 small mammals at once.

Eggs: Shortly after pairing with a male, the female owl will lay between 6 to 12 eggs, laying one egg every 36 hours. The average clutch size is nine eggs; the earlier the laying begins, the larger the clutch size. Egg laying may occur between the last week of April and the second week of June. Incubation begins after the fourth or fifth egg is laid. Eggs hatch in 26 to 30 days.

Chicks: Newly hatched chicks are totally dependent on their parents for warmth and food for the first two to three weeks. The female tends the young while the male hunts.

Burrowing Owl range in North America
(Speotyto cunicularia)

LEGEND

Western Burrowing Owl (breeding)

Western Burrowing Owl (year-round)

Florida Burrowing Owl (year-round)

(adapted from Wellicome, 1997 and B.C. Ministry of Environment, Lands and Parks, 1998.)

The chicks do not hatch all at the same time. During food shortages, the youngest chicks may die or be killed and eaten by the older chicks. Badgers are the key predators on young chicks during the nesting period.

About three weeks after hatching, the young owls may be seen at the entrances to the burrows. Some will be enticed to nearby burrows by their parents. It is thought that this is a survival strategy so that if a predator attacks one burrow, not all the young will be killed. Major avian (bird) predators of young during the fledgling period include Great Horned Owls, and Ferruginous, Red-tailed, and Swainson's Hawks.

The young owls fledge, or begin to fly and hunt on their own, about five to six weeks after hatching. While they will hunt almost anything that they can catch, their major prey species include small mammals and birds, amphibians, and insects. If enough food is available, the owlets will eat up to half their own body weight every day. By eight to 10 weeks, the young owls are independent of their parents.

Going South: Fall Migration extends from the third week of September to mid-October. Tracking radio-collared Burrowing Owls has found that they can travel 100 to 300 kilometers per night. Ham radio operators are actively involved in helping Canadian researchers track radio-tagged owls on their migration. For more information about this interesting project go to the Burrowing Owl Project web page at http://members.aol.com/joemoell/owl.html.

Limiting Factors and Recovery Needs

There are many factors, natural and related to human activity, that are likely contributing to the decline of Burrowing Owl populations across North America. Considerable research efforts in Saskatchewan, across Canada, and internationally, are identifying what actions can be taken to ensure the survival of these owls.

Habitat Loss: Conversion of grassland to cropland is considered a major factor in the decline of owl populations. Less than 25 per cent of native prairie remains in Saskatchewan. In the Regina Plain study area, over 90 per cent of the land has been converted from native grasslands to crop land and urban development.

Habitat Fragmentation and Change: Owls in Saskatchewan are typically found nesting in small patches of heavily grazed pasture land, usually smaller than a quarter section. These remnant patches are isolated from each other by several kilometers of cultivated land. Burrowing Owls need grass and other wild plant (forb) areas close to the nest site for hunting, and there is little natural food found on cropland.

Predators: Many mammalian predators are thriving on the prairies (e.g. red fox, coyote, raccoon, and striped skunk). Fragmented and small patches of grassland make it easier for predators to search for and find owls and their nests. Also, the increase in trees on the prairies has favoured the increase of some avian (bird) predator populations (Red-tailed Hawks and Great-horned Owls). Other predators include weasels, badgers, rattlesnakes, bull snakes, domestic cats and dogs, Swainson's and Ferruginous Hawks, Northern Harriers, Prairie Falcons and Short-eared Owls.

Food Shortage: Research has shown that providing extra food can significantly increase the number of young owls that survive to fledging, which may suggest that the males are not able to find enough food. Agricultural practices most likely account for this lack of prey. Research also suggests that a shortage of small mammals, such as voles, has caused avian (bird) predators to hunt Burrowing Owls for food. In 1997, reduced avian predation on young owls correlated with a very large increase in the vole population, which provided an abundant food source for both owls and other birds of prey.

Fewer Burrow Providers: Ground squirrels and other burrowing animals have been actively destroyed as pests. The shortage of burrowing animals means fewer burrows are available for use by Burrowing Owls as nest sites, roosts, and for escape cover from predators.

Pesticides: Insecticide spraying for grasshoppers which feed on planted crops usually occurs on fields at about the same time that the owls need grasshoppers as their basic food source. Research in the Regina area in 1987 found a relationship between Carbofuran use and a decline in the number of owls fledged. Also, only half as many nests were successful in raising at least one young owl. The owls may have been directly affected by the spray, by eating the poisoned grasshoppers, or by the general lack of food after spraying.

Successful lobbying by conservation organizations resulted in liquid Carbofuran being deregistered in 1995 as a grasshopper control because of its toxic effects on owls and other wildlife. In 1998, granular Carbofuran, used on canola, was also deregistered. Research has also been initiated to determine the effects of other pesticides on Burrowing Owls.

Collisions with Vehicles: Roadways also present a danger. As Burrowing Owls tend to fly low when foraging, they may be hit by vehicles. The owls may also be hit when foraging for insects found alongside the roads or when scavenging for small mammals killed on the roads.

Mortality on Migration and in Wintering Areas: Burrowing Owl survival may also be affected by conditions along migration routes and in wintering areas, such as extensive conversion of grasslands to crop land, and the extensive eradication of prairie dog colonies.

Recovery Actions

A national recovery plan for the Burrowing Owl was approved in 1995. Its goal is to increase the population of Burrowing Owls in Canada to self-sustaining levels, so the species will no longer be listed as endangered or threatened. In 1999, Saskatchewan provided legal protection to Burrowing Owls on private, provincial and federal lands through the *Wild Species at Risk Regulations* under *Part V* of *The Wildlife Act*.

Saskatchewan leads North America in research efforts to help the Burrowing Owl population recover. Details of Saskatchewan research and monitoring, summarized below, are available at http://www.nature.sask.com/obo.htm or at www.serm.gov.sk.ca/ecosystem/speciesatrisk.

- 1987 to present: Operation Burrowing Owl (OBO) is monitoring Burrowing Owl populations in Saskatchewan.
- 1987: Significant declines in Burrowing Owl populations first reported in the Regina Plain study area.
- 1994 to present: The Saskatchewan Burrowing Owl Recovery Project has investigated factors affecting the Regina Plain Burrowing Owl population.
- 1997: Migration Tracking Project studied the migration behaviour of the owls. (See Life Cycle section above for more information on this project).
- 1997 to 1998: Captive-bred adult owls were released to determine appropriate captive release techniques. This release strategy was not considered to be effective.
- 1997: The Saskatchewan Burrowing Owl Interpretive Centre (SBOIC) opened to the public at the Moose Jaw Exhibition Grounds, near the TransCanada Highway. Call them at: 1-306-692-8710.
- 2000 to 2001: Gap Analysis of Saskatchewan Habitat Lands Protection Status Project. Its goal is to identify unprotected critical habitat and seek voluntary or legal protection.
- The Canadian Wildlife Service is monitoring populations in and near Grasslands National Park in Saskatchewan, and in Alberta. Winter monitoring in Texas and Mexico continues.

Research projects have been possible because of partnerships between government agencies, non-government organizations, universities, industry and landowners. Recovery efforts will be successful through stakeholders' voluntary participation.

Guidelines limit direct disturbance of active owls' nests during the nesting period, April 15th to July 15th, to improve the odds of the owls remaining in their nests, and successfully raising young. For guidelines information, see www.biodiversity.sk.ca

Landowners can adopt land management practices to assist in the recovery of the Burrowing Owl: check Burrowing Owl Fact Sheet 2. Everyone can take actions to benefit the Burrowing Owl and the prairie ecosystem: check Fact Sheet 3. View Fact Sheets at http://www.nature.sask.com/obo.htm, or the full text of this brochure at www.serm.gov.sk.ca/ecosystem/speciesatrisk.

Help monitor Saskatchewan's Burrowing Owl population by reporting observations. Please phone the HOOT line at 1-800-667-HOOT (4668).

Selected References

Please contact your local library or visit the Internet sites below for more information on Burrowing Owls.

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